

Remarks

Upon entry of this Amendment, Claims 1-41 will be pending in this application. Claims 1-36 stand rejected. Claims 37-41 are newly added.

In accordance with 37 C.F.R. 1.136(a), a two month extension of time is submitted herewith to extend the due date of the response to the Office Action dated June 16, 2004 for the above-identified patent application from September 16, 2004 through and including November 16, 2004. Authorization to charge a deposit account in the amount of \$420.00 to cover this extension of time request also is submitted herewith, plus an additional amount to cover the additional claims added in this Amendment. In the event that the requested extension of time or the authorized fee payment is insufficient to allow entry of this Amendment, the Commissioner is authorized to consider this a request for the necessary extension of time and/or authorization to charge the deposit account the fees necessary to permit entry and consideration of this Amendment.

The rejection of Claims 1-12, 15-29, and 34-36 under 35 U.S.C. § 102(b) as being anticipated by Boyd et al. (U.S. Pat. 5,014,293) is respectfully traversed.

The Office asserted that Boyd teaches a method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes. For example, Boyd teaches that transverse tomographs are obtained by scanning projecting images at multiple angles and that tomosynthesis is used to reconstruct the data obtained in this manner to produce an image, col. 4, lines 3-7. Also, Boyd teaches that, in a CT mode, the instrument rotates the x-ray fan through an angle of 180 degrees plus the source bandwidth, col. 4, lines 7-10. Although Boyd teaches obtaining operating the imaging system in two modes to obtain images, and that additional projection measurements can be obtained in some modes to provide corrections for artifacts, col. 4, lines 17-22, Boyd does not teach or suggest configuring the multimode imaging system to combine at least one image from the first mode of operation with at least one image from the second mode of operation to thereby improve image quality, or that the multimode imaging system described therein is so configurable.

By contrast, Applicants' Claim 1, as herein amended, recites, "...configuring the multimode imaging system to combine at least one image from the first mode of operation with at least one image from the second mode of operation to thereby improve image quality." See page 12, lines 24-29 of the Application as originally filed.

Because no such configuring of a multimode imaging system is taught or suggested by Boyd et al., it is submitted that Claim 1 is neither anticipated nor rendered obvious by Boyd et al., and thus Claim 1 is patentable over Boyd et al.

Claims 2 and 3 depend directly upon Claim 1 as amended. When the recitations of Claims 2 and 3 are considered in combination with the recitations of Claim 1, it is submitted that Claims 2 and 3 are likewise patentable over Boyd et al.

Claim 4 as herein amended recites, "... said imaging system configurable to combine at least one image from a first mode of operation with at least one image from a second mode of operation to thereby increase image quality." It is therefore submitted that Claim 4 is patentable over Boyd et al. for reasons corresponding to those given with respect to Claim 1.

Claims 5-12 and 15-17 depend directly or indirectly upon Claim 4 as amended. When the recitations of Claims 5-12 and 15-17 are considered in combination with the recitations of Claim 5, it is submitted that Claims 5-12 and 15-17 are likewise patentable over Boyd et al.

Claim 18 as herein amended recites, "... said system further configured to enable the operator to select at least one additional mode of operator from the plurality of modes of the imaging system and to combine images from the selected modes of operation to thereby improve image quality." Thus, it is submitted that Claim 18 is also patentable over Boyd et al. for reasons substantially similar to the reasons given with respect to Claims 1 and 4.

Claims 19-29 and 34-36 depend directly or indirectly upon Claim 18 as amended. When the recitations of Claims 19-29 and 34-36 are considered in combination with the recitations of Claim 18, it is submitted that Claims 19-29 and 34-36 are likewise patentable over Boyd et al.

Claim 36 as herein amended recites, "... generating an image of the object for each selected mode of operation; and configuring the multimode imaging system to combine the

generated images to thereby improve image quality." (The word "determined" has been replaced by "selected" for better consistency with other parts of the claim.) It is submitted that Claim 36 is also patentable over Boyd et al. for reasons substantially similar to those given with respect to Claims 1, 4, and 18.

For the above reasons, it is requested that the rejection of Claims 1-12, 15-29, and 34-36 under 35 U.S.C. § 102(b) as being anticipated by Boyd et al. be withdrawn.

The rejection of Claims 13-14 and 30-33 under 35 U.S.C. § 103(a) over Boyd et al. in view of Nambu et al. (U.S. 6196715B1) is respectfully traversed.

Boyd et al. is as discussed above.

Nambu et al. has been discussed at length in previous Amendments and Office Actions of record in this case. Nambu et al. enumerates at least five embodiments. In a first embodiment, image reconstruction is discussed at length beginning at col. 30, line 45 under the heading "8. Image Reconstruction." Discussion of multiple modalities occurs in a later section beginning at col. 45, line 43 under the heading "10. Multiple Modalities." There is a discussion of image recombination beginning at col. 49, line 28, but insofar as Applicants have been able to determine, there is no teaching or suggestion of combining images from two different modalities of operation to improve image quality in Nambu et al. in the description of the first embodiment. The second embodiment at col. 51, line 18 is directed to an x-ray tomosynthesis system in which movement of the tube and the detector is simplified for easy image recombination. The third embodiment at col. 51, line 14 has a total of five imaging modes. The imaging for each mode is described separately, and it is believed that there is no teaching or suggestion of combining images from different modes of operation to improve image quality. Although there are a number of subtraction or difference imaging modes discussed in conjunction with the third embodiment, as best understood, these subtraction or difference imaging modes combine images from the *same* modes of operation rather than from *different* modes of operation. Neither the description of the fourth embodiment at col. 61, line 27 to col. 61, line 60 nor the description of the fifth embodiment at col. 61, line 62 to col. 62, line 44 appear to discuss combining images obtained from different modes of operation to produce improved image quality.

Thus, Nambu et al. adds nothing to Boyd et al. to teach or suggest combining images obtained from different modes of operation to produce improved image quality.

By contrast, and as described above, Applicants' Claims 4 and 18 are patentable over Boyd et al. for reciting features related to this combination of images from different modes of operation. Therefore, Claims 4 and 18 are patentable over Boyd et al. in view of Nambu et al.

Claims 13 and 14 depend indirectly upon Claim 4. When the recitations of Claims 13 and 14 are considered in combination with the recitations of Claim 4, it is submitted that Claims 13 and 14 are likewise patentable over Boyd et al. in view of Nambu et al.

Claims 30-33 depend indirectly upon Claim 18. When the recitations of Claims 30-33 are considered in combination with the recitations of Claim 18, it is submitted that Claims 30-33 are likewise patentable over Boyd et al. in view of Nambu et al.

Claims 37-40 are new. Each of these claims recites, or incorporates by reference via dependency, features similar to those argued above to be patentable in independent Claims 1, 4, 18, and/or 36. For this reason, it is submitted that Claims 37-40 are patentable over the art of record in this Application.


Claim 41 is also new. This claim recites, "A method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes of operation, said method comprising operating the imaging system in a 3-D image mode to locate a desired element and then operating the imaging system in an x-ray fluoro mode to predict or determine the trajectory of a medical instrument with respect to the desired element." See page 11, lines 15-27 of the Application as originally filed. Although Nambu et al. mentions perioperative navigation several times from col. 46, line 32 to col. 47, line 63, Nambu et al. does not teach or suggest using an imaging system in a 3-D image mode to locate a desired element and then operating the imaging system in an x-ray fluoro mode to predict or determine a trajectory. Instead, Nambu et al. teaches to use a navigator, which is an instrument separate from the imaging system, to predict the trajectory. Although the imaging system described in conjunction with this embodiment of Nambu et al. may provide multiple modes of operation, Applicants submit that there is no teaching or suggestion of using more than one mode of the imaging

instrument to determine or predict the navigational trajectory. However, by using two different modes, specifically, the modes recited in Applicants' Claim 41, the method claimed by Applicants makes the use of a separate instrument to determine or predict the navigational trajectory unnecessary. Therefore, it is submitted that Claim 41 is patentable over the prior art of record.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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